

do not ascribe the great practical importance to them that Dr. Savage does; that is purely a matter of individual experience and judgment.

The small chapter on routine in eye work is interesting because it gives one the routine procedures of a practitioner of as long experience and of as high a standing as Dr. Savage. For those doing eye work as a specialty there is nothing to be learned from it, however, as we all have to adopt our own routine as our character, temperament and training leads us to it.

H. B.

Handicraft for the Handicapped. By Herbert J. Hall and Mertice M. C. Buck. New York: Moffatt, Yard & Co. 1916.

A book written from practical experience is always of value and especially on this important subject of employment for those of our patients who are suffering from nothing to do. This book very fully describes the essential points for the casual reader on the subject, and also many of the more detailed directions for the teacher or the patient. The variety of subjects covered enables us to choose the one most adapted to our individual needs.

Parts of the work as here described could be applied to cripples, convalescents from acute or chronic diseases not able as yet to go back to hard work, tuberculous patients in an arrested stage, neurasthenics and some with more serious mental deficiency.

The authors take up the subjects of basketry, chair-seating, netting, weaving, bookbinding, cement-working, pottery, and light blacksmithing, and have appended a very considerable reference list of books going into more detail on many of these subjects. In the chapter on basketry details are given as to the kind and size of reeds to use, how to prepare them for use and diagram illustrations of just how to weave them to produce certain baskets and forms. Pictures are shown that make chair-seating appear very easy. Different knots employed in netting and numerous suggestions as to articles that can be made are of help in that section. Weaving requires a larger apparatus than some of these other arts, but this too is carefully described. Bookbinding, although quite a complex process, is carefully outlined and pictured. In this, as in the other arts and crafts, a little practical instruction will aid materially the suggestions in this book. There is considerable difference between cement work and pottery, the former requiring no kiln or expensive lathes and consequently producing a cruder, but a nevertheless, serviceable set of articles. Blacksmithing does not refer to shoeing horses, but to making useful household wares, such as andirons, pokers, heavy latches, etc.

And so readers of this book will find that Dr. Hall and Mertice Buck have from their own experience at Devereaux Mansion, Marblehead, and elsewhere, suggested many practical occupations that are a pleasure as well as a stepping stone to self-reliance and health.

P. H. P.

DEPARTMENT OF BACTERIOLOGY AND PATHOLOGY.

(Edited by Benjamin Jablons, M. D., San Francisco.)

[This department has as its chief object the dissemination of the special knowledge that is being developed in the scientific laboratories of the world, and which are of practical interest to the medical practitioner. Abstracts of general articles will be published from time to time as well as preliminary reports of subjects that are of universal interest.]

Complement Fixation for Tuberculosis.

To appreciate the factors entering into the Complement Fixation Reaction for Tuberculosis it is

necessary to keep two points in mind; first, the reaction of the human organism to the tubercle bacillus and its derivatives and, second, its reaction to the tissue products resulting from the action of the tubercle bacillus. It is known that the introduction of the foreign protein of whatever nature into the body calls a specific and non-specific response. The specific reaction is that evidenced by the mobilization of an antibody, whose nature may be that of either an agglutinin, a precipitin, a bactericryptin, an opsonin, a bacteriolysin or a complement fixing antibody. Then the non-specific antibodies may also be mobilized and these are chiefly of the ferment and anti-ferment variety. In order therefore to diagnose the presence of an organism that is sufficiently active to call forth a response from the infected body, it is necessary to seek for one or even all of these antibodies.

Datta, in an article published July, 1915, in the *Policlinico*, summarizes his studies in sixty tuberculous patients in whom parallel observations were made of a skin tuberculin reaction, agglutination precipitin and complement fixation test, using two different technics for the latter. He found that the skin tuberculin reaction was the most constant in all cases of pulmonary tuberculosis, excepting those that were more advanced. The fixation of complement came next in order of frequency and was most constant in the graver cases. The agglutinins and precipitin tests never gave independent positive findings but trailed the others, giving positive findings occasionally in the milder cases. He advises for diagnosis and prognosis of tuberculosis, that the skin tuberculin test plus the complement fixing reaction be employed. Krause's recent publications on the studies of the skin reaction in the immunized guinea pigs conclusively prove the contention of many observers that the supersensitiveness to tuberculo protein after pre-existing infection is never entirely lost even after healing excepting in the presence of intercurrent diseases. This naturally increases the limitations of this test as a diagnostic factor for the determination of an early active tuberculosis.

Theobald Smith, in a recent number of the *Journal A. M. A.*, states that agglutinins and precipitins are constant in spontaneous infections with the tubercle bacillus; the opsonins are, however, slightly reduced or fluctuating. Complement fixing bodies are never present in healthy individuals, but occur in 68% of those infected. This has been disproved by most of the recent work. Opsonin determinations have been discarded since the early reports of Wright owing to their inconstancy and the fluctuations produced by auto-infection.

Complement deviation still remains the most delicate test for the detection of the presence of an antibody producing substance. Its delicacy is such that even minimal amounts of proteins can be recognized when brought in contact with their specific antibodies in the presence of complement. This accounts for the strenuous efforts immunologists have made to apply this test to the diagnosis of tuberculosis since Bordet and Gengou first described their phenomenon.

A great deal of interest has been aroused recently in the subject owing to the fact that several investigators claim to have attained the goal which they had been striving for since the earliest reports of the work of Wassermann and Bruck. The chief difficulty was to obtain a suitable antigen which would react with the antibodies produced as a result of an infection with the tubercle bacillus. This if obtained would solve the problem of early diagnosis of tuberculous infection and also determine whether a definite cure was present. The difficulties encountered can best be seen from a review of some of the work of various investigators. In the early days of the test the various